WE CLAIM:

1. A circuit for processing an audio signal including an input stage for receiving the audio signal and an output for presenting a processed audio signal, comprising:

a signal source providing the audio signal having positive and negative wave portions;

first and second input stages having substantially identical nonlinear performance curves, the first input stage receiving the audio signal, and the second input stage receiving an inverse of the audio signal, the first and second input stages further including control points that are selected such that of the positive and negative wave portions, one of the portions is processed substantially nonlinearly and the other of the portions is processed substantially linearly; and

a difference amplifier receiving the processed portions from the first and second input stages and producing the processed audio signal.

2. The circuit of claim 1, wherein the first and second input stages comprise passive circuits for generating the nonlinear performance curves.

3. The circuit of claim 2, wherein the passive circuits comprise diodes.

4. The circuit of claim 1, wherein the first and second input stages comprise amplifiers having nonlinear performance curves.

5. The circuit of claim 1, wherein an inverter circuit provides the inverse input signal for the second input stage.

6. The circuit of claim 1, wherein the difference amplifier is operated in a linear range.

7. The circuit of claim 1, wherein said circuit has a high input impedance for uncoupling it from the signal source.

8. The circuit of claim 1, wherein said circuit is cascaded to achieve a greater dynamic signal compression.

10. The circuit of claim 1, in which the signal source includes an electrical musical instrument.

11. The circuit of claim 1, in which the processed audio signal has a headroom that is at least about 6 dB greater than a headroom of the audio signal.